

OPERATING INSTRUCTIONS



DUSTOMAT 4 – ATEX

Mobile Dust Extractors

Welcome to the sphere of suction technology

Your purchase of an **ESTA** machine has been a good decision. The design of our quality products complies with the latest state of the art. **ESTA** products have been devised to provide for clean air at the workplaces at which they are applied. This results in an even more enhanced level of quality and longer machine times and, particularly, healthier working conditions. Should you have any questions pertaining to suction technology issues, please feel free to contact us at any time. Our experts will be gladly at your disposal.

Your **ESTA Absaugtechnik** Team

**DEDUSTING
EXTRACTION
CLEANING**

The logo for ESTA, consisting of the letters 'ESTA' in a bold, red, sans-serif font, centered within a light gray square background.

Operating Instructions



DUSTOMAT 4 ATEX Non-Conductive Dusts

DUSTOMAT 4-10 ATEX	Order no	09.732
DUSTOMAT 4-24 ATEX	Order no	09.762

and variations



Do not use this device unless you have read the operating instructions and understood them.

Translation of the original operating instructions
09732-08-01

Edition notice

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1 General instructions

1.1 Target group

This guide is aimed at the following target groups:

Task	Target group	Qualification	Protective equipment
Transportation	Warehouse and logistics staff	Essential knowledge of the warehouse and transport industry	<ul style="list-style-type: none"> - Safety shoes - Safety helmet - Work gloves
Installation Commissioning Operation	Trained operating personnel	Basic knowledge of the extraction process and the extracted material	<ul style="list-style-type: none"> - Hearing protection - Safety shoes - Safety helmet - Work gloves
Troubleshooting	Electrical specialist	Technical training with knowledge and experience for identifying and preventing hazards posed by electricity	
Servicing / Cleaning	Trained cleaning personnel	Essential knowledge of the extracted materials and how these should be handled in accordance with local regulations	<ul style="list-style-type: none"> - Hearing protection - Safety shoes - Work gloves - Particle filter masks
Maintenance	Trained maintenance personnel		
	Electrical specialist	Technical training with knowledge and experience for identifying and preventing hazards posed by electricity	<ul style="list-style-type: none"> - Safety shoes - Hearing protection - Work gloves

1.2 Tips

Before operation, all persons who are to use the device or perform maintenance on it must be provided with information, instructions and training in using the device and on the substances for which it is to be used, including the procedure for safe disposal of the collected material. Responsibilities must be clearly established for the following:

- **Installation**
- **Commissioning**
- **Operation**
- **Maintenance and repairs**



Read the instructions carefully before working with the device.

The device must be used only by persons who have been instructed in its handling and are explicitly authorised to use it.

Always keep the instructions at the place where the device is being used, so that they can be seen by personnel at all times.

These instructions describe the device at the time of first delivery following manufacture.

- Keep the documents throughout the device's service life.
- Pass these and other supplementary documents on to any subsequent owners or users.
- Add all changes to the documents that they obtain.

Check the completeness of the documents and pay attention to their content.

2 Product identification

2.1 Technical Data

We reserve the right to make technical changes.

Item no.		09732			09762	
Model DUSTOMAT 4		4-10			4-24	
Drive power	[kW]	2,2			4,0	
Connection voltage	[V]	400				
Nominal frequency	[Hz]	50	60	50	60	
Nominal current	[A]	7,8			7,6	
Circuit breaker	[A]	C16A (Automat)				
Protection class		IP 54				
Max. vacuum	[Pa]	2.500			3.600	
Max. volume flow	[m³/h]	2.000			3.250	
Filter type		Filterpatrone Filterklasse M				
Collection drawer	[I]	42-50				
Disponal carton (38 Liter)	[Stck.]	2				
Average sound pressure level LpA*	[dBA]	68			71	
Suction-socket ø	[mm]	125	140	160	180	200***
Dimensions L x W x H (including filter unit)	[mm]	1.460 x 935 x 1.440			1.660 x 950 x 1.630	
Total weight (including filter unit)	[kg]	ca. 260			ca. 310	
Production year		siehe Typenschild				
Ambient temperature	[°C]	5≤9≤40				
Rel. humidity	[%]	30 - 70				
Min. spatial requirement around the device		1.000				
Operator's side (front)		1.000				
Inlet	[mm]	1.000				
Outlet		500				
Rear		1.000				
Top						
Ambient temperature	[°C]	5≤9≤40				

* using the enveloping surface method DIN EN ISO 3744, measured at minimum volume flow; noise measurement margin of error approx. 4 dBA

** Custom voltage on request

2.2 Intended application

2.2.1 Intended use

The device has been manufactured based on state-of-the-art technology and according to recognized safety regulations and must be used as intended:

- As a fan unit of a modular dust extraction concept.
- For commercial use, such as in industrial enterprises and workshops.
- For the extraction of non-conductive dusts in individual work areas in Zone 22.
- For the separation of dry, free-flowing, flammable, explosive and non-conductive dust-air mixtures in dust-explosive zone 22 (see BetrSichV [German Ordinance on Industrial Health and Safety], Annex 3).
- Only for installation on conductive foundation or breccia (e.g. rock, concrete, wood).
- Only for dry cleaning.
- As a central extraction system on dust-generating machinery.
- As a central extraction system on chip-generating machinery.
- Only in combination with electrically conductive pipe or hose lines.

Other applications are considered unintended use. ESTA is not liable for damages due to unintended use!

2.2.2 Improper use

The device has been manufactured according to the state of the art and recognized safety regulations. Unintended use may cause hazards.

Therefore:

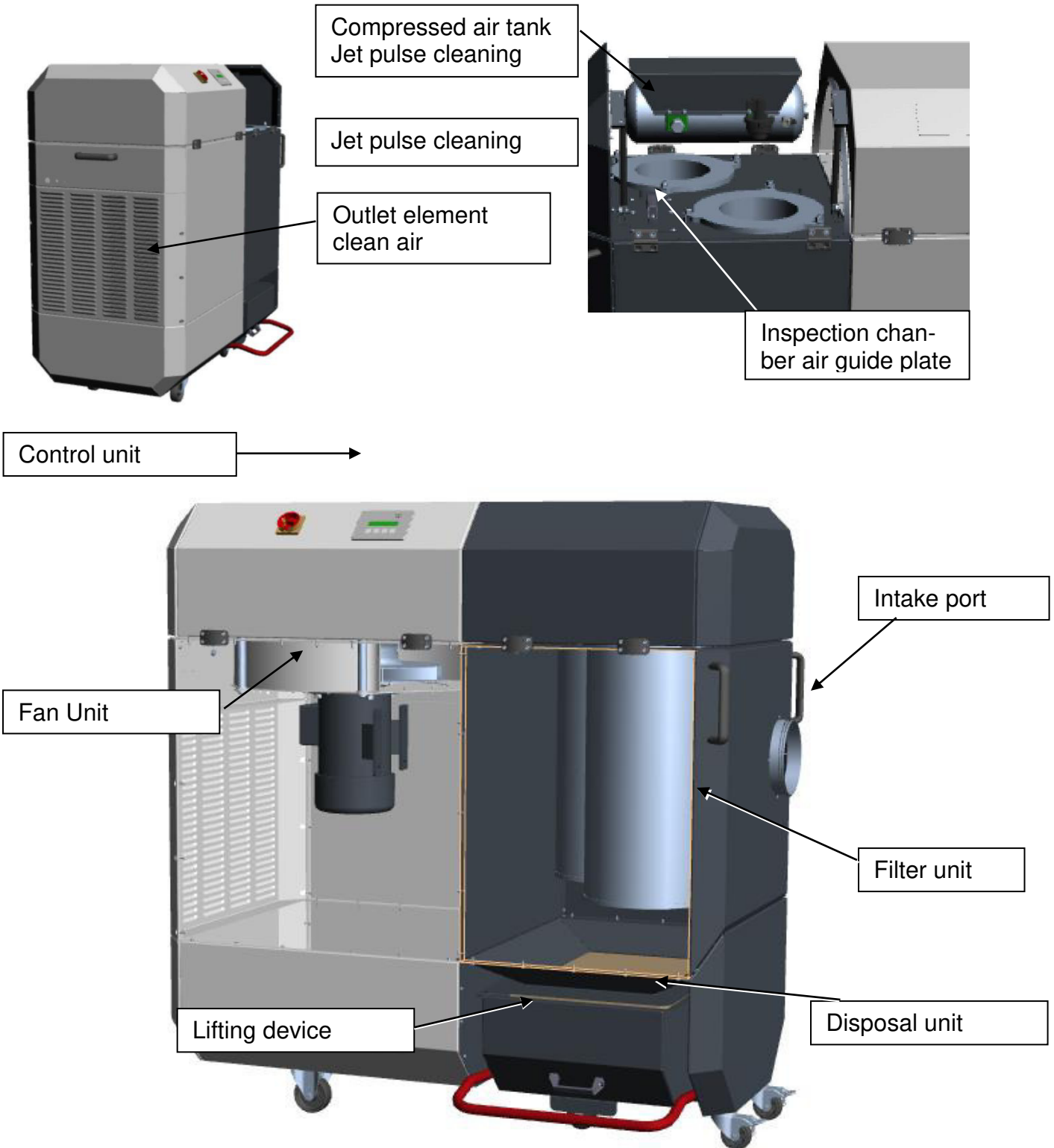
- **Do not** use or store outdoors or in wet conditions.
- **Do not** change the location of the device during suction operation.
- **Not** for the extraction of dusts with a known low minimum ignition energy (MIE <10mJ).
- **Do not** set up or operate in dust-explosive zones 20 and 21.
- **Do not** set up or operate in gas-explosive zones.
- **Do not** suck in or extract explosive or equivalent materials in the sense of § 1 of the *Sprengstoffgesetz* [German Explosives Act], of liquids, or of mixtures of flammable dusts with liquids.
- **Do not** suck up dust sources for which suction connection is larger than that of the device.
- **Do not** use in painting operations.
- **Do not** connect to processing machines that may produce active ignition sparks or hot embers.
- **Do not** suck up liquids.
- **Do not** suck up aggressive gases.
- **Do not** suck up any readily flammable or glowing particles.

2.2.3 Reasonably foreseeable misuse

- Intake of glowing embers such as, e.g., cigarettes
- Intake of items not suitable for suction (e.g., mobile phone, tool, glove, screws, etc.)
- Unauthorised modifications to the product
- Closing the intake opening

3 Product Description

3.1 Illustration of the DUSTOMAT 4 ATEX device



3.2 Functional description

The fan unit can be combined with different filter units from the DUSTOMAT 4 series. It is equipped with a three-phase motor which drives a radial fan. The device is supplied with or disconnected from the requisite power via a main switch. The fan is turned on and off via the control panel.

Due to the negative pressure produced by the fan, air is sucked in through the corresponding filter unit. Permanent filters located in the filter unit separate the dust contained in the air which is sucked in. The purified air is guided back into the room through the outlets on the top of the fan unit.

The device is fitted with a pre-separator / air guide plate. This pre-separator / air guide plate is installed behind the intake connection piece, which pre-separates coarse particles and thus prevents these coarse particles being sucked against the filter.

The control unit is integrated within the fan unit. The control unit monitors the volume flow and controls the cleaning of the filter. If the value set in the control system for the minimum volume flow is reached during operation, this will be indicated by a message in the text field of the control panel. At the same time, the filter cartridges are cleaned automatically with compressed air. A pneumatic jet pulse cleaning device is integrated within the device's filter unit for this very purpose. The filters are freed from dust and regenerated through this cleaning.

The disposal unit attached below the filter collects the dust that has been cleaned off. The collection drawer is lowered and pulled out for easier disposal of the collected material. Depending on the material collected, a disposal carton can be inserted into the collection draw which is disposed of together with the collected material.

3.3 Minimum volume flow monitoring

Extraction elements with various intake connection piece diameters can be operated with the device. When so doing, you must ensure that

- The minimum airflow volume sucked away is not undershot.
 - The minimum airflow volume depends on the diameter of the intake connection piece of the extraction element and the requisite conveying velocity.

4 Safety

4.1 Hazard categories

Safety instructions and cross-topic information are indicated in this manual by symbols. Based on the severity of the hazard, the hazard warnings are categorized as follows:

	DANGER
	Warning and safety notices for ATEX devices and protection systems for a recognised danger. Failure to comply can lead to severe injury or death, and can destroy the device or parts thereof.

	DANGER
	Hazard warning about an immediate danger to people. Failure to comply can lead to severe injury or death.

	WARNING
	Warning about a recognisable hazard. Failure to comply can lead to severe injury or death, and can destroy the device or parts thereof.

	CAUTION
	Instruction about a hazard. Failure to comply can lead to mild injury and to damage to the device.

NOTE
Information on possible damage to the product and the environment. Non-observance may cause material damage.

4.2 Symbol explanation

	Further ATEX information
--	--------------------------

	Further information
--	---------------------

	Reference to ESTA customer service
--	------------------------------------

	Reference to legal regulations
--	--------------------------------

4.2.1 Symbols on the device



Before commissioning, read and observe the operating instructions and safety instructions (per ISO 11684)



1. Switch off the product.
2. Wait 5 minutes.
3. Then pull out the collection drawer or open the product



Zone 22 ✓

Do not take in glowing dust or other sources of ignition. Do not use in conjunction with spark-generating machinery.

Suitable for connection to dust-producing machinery in Zone 22. One must ensure that no sources of ignition are picked up.



Do not open in an explosive atmosphere!

The control cabinet must not be opened while it is located in an explosive atmosphere.


4.3 General safety instructions

During extraction, the volume flow returned from the device into the room should be no more than 50% of the air supplied. With open room ventilation, supply air flow should be assumed as equal to the room volume every hour. This means that the rate of air replacement must be once per hour.

$$\text{Supply air flow [m}^3\text{/h]} = \text{Room volume [m}^3\text{]} * \text{Air replacement rate [1/h]}$$


Example:

When the device is operating at the nominal airflow volume of 1,060 m³/h, the same volume of fresh air must be fed in. This occurs with natural ventilation if the volume of the work room is 1,060 m³ (e.g., 353 m² surface with a 3 m ceiling height).

	<p>According to work equipment user directives 2009/104/EG and TRGS 560, safety devices for prevention or removal of hazards must be regularly maintained and regularly inspected by an expert for safe, flawless operation.</p>
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In all emergencies, the device must be disconnected from the power supply immediately, turned off at the main switch and the plug pulled immediately.


4.4. Fire hazard prevention

	DANGER
	<p>Danger of fire due to sparks and glowing particles</p> <ul style="list-style-type: none"> • If there is a fire, alert the fire department immediately, and contain the fire by appropriate means. • Keep a suitable extinguishing agent near the product before start-up and during operation.

A cyclone can separate sparks and glowing particles but the manufacturer does not guarantee any protection from fire as a result. Spark detection and quenching systems adapted to the application can be provided for this.







4.4 Preventing mechanical hazards

	WARNING
	<p>Crushing hazard</p> <ul style="list-style-type: none">• Make sure that the surface can be driven on, is level and sufficiently load bearing.• Always wear safety shoes when moving the device!• Keep covers tightly closed during operation• Do not place on a sloping floor!• Always engage the castor locks when parking the device!• Look out for pipe and hose connections and other valves when moving the device. Detach if necessary.

	WARNING
	<p>Risk of falling and tripping</p> <ul style="list-style-type: none">• Always pay attention to the local accident prevention regulations.• Keep a distance from the device when you are not working with it.• Always push the collection drawer back in after visual inspection and emptying.• The lifting device protrudes from the device when at rest.• Do not stand on the lifting device.


All movable machine parts driven by electric motors must be covered by fixed, securely fastened protective covers that can be removed only with tools.

4.5 ATEX hazard prevention

	<p>DANGER</p> <p>Risk of explosion from the intake of sources of ignition</p> <ul style="list-style-type: none"> • Ensure that no ignition sources can be sucked in. • Do not connect to processing machines that may produce active ignition sparks or hot embers.
	<p>DANGER</p> <p>Risk of explosion from installing and operating in a prohibited zone</p> <ul style="list-style-type: none"> • Installation and operation is only permitted in dust-explosion zone 22! • Installation and operation in dust-explosion zones 20 and 21 is prohibited! • Installation and operation in gas-explosion zones is prohibited!
	<p>DANGER</p> <p>Risk of explosion due to use of unauthorised spare and accessory parts</p> <ul style="list-style-type: none"> • Only use original ESTA spare parts and plug devices in line with DIN EN 60079-14. • Do not use any extension lines, coupling plug devices or adapters. • The operator is to ensure that conductible extraction systems (e.g. extraction hood and pipe line) and conductible processing machine (e.g. devices of protection class II), which are not earthed via the device, are earthed in a different fashion.
	<p>DANGER</p> <p>Risk of explosion from opening the control cabinet in an explosive zone.</p> <ul style="list-style-type: none"> • Only open control cabinet outside of explosion zones.
	<p>DANGER</p> <p>Risk of explosion from opening the device in an explosive zone.</p> <ul style="list-style-type: none"> • Perform maintenance, cleaning and servicing work for which the device must be opened in a well-ventilated room or install locally filtered forced-air ventilation in this area. • In the event of maintenance, cleaning and servicing work for which the device must be opened, only use tools and wear protective clothing (ESD) that are suitable for the zone.
	<p>DANGER</p> <p>Risk of explosion from working on the device with tools that are not permitted</p> <ul style="list-style-type: none"> • In the event of maintenance, cleaning and servicing work, only use tools and wear protective clothing (ESD) that are suitable for the zone.

In a raw gas zone, one must assume zone 21 while the device is in operation. The device is designed for this operation.


4.6 Preventing electrical hazards


	DANGER
	<p>Electric shock from high voltages</p> <ul style="list-style-type: none">• Follow the safety rules for working with electrical devices• Secure the device against reactivation with a padlock• Render the device voltage-free by pulling the mains connector• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.• Do not damage by running over, crushing, straining, etc.• Regularly check the power cable for damage and ageing.• Do not use if damage has been found on the power cable!• Keep covers closed during operation• The device must be secured from being switched on again while work is being carried out on it.

All electrical parts must be covered by fixed, securely fastened protective covers that can be removed only with tools. The device complies with Protection Class I according to EN 60335.

After use, before moving the device to another site and before cleaning, maintenance, or replacement or removal of movable parts, switch off the system at the main switch and pull the mains connector.

4.7 Preventing dust hazards

	<p>CAUTION</p>
	<p>Damage due to dust release</p> <ul style="list-style-type: none"> • Maintenance, cleaning, repair and emptying work must be done only by expert personnel. • Wear personal protective gear. <ul style="list-style-type: none"> - Respirator mask (particle filter class P3) - Protective clothing - Protective gloves • Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned. • Operate the device only with the complete filtration system. • Seal the intake port with a sealing plug so it is dust-tight when transporting.


	<p>CAUTION</p>
	<p>Damage due to dust build-up in the pipe system</p> <ul style="list-style-type: none"> • Check the connected piping system regularly for dust deposits. • Observe the minimum air speed required for your application and the resulting minimum airflow volume.

When removing the dust collection carton and the collection drawer, dust inhalation cannot be ruled out. That is why all servicing, cleaning and maintenance procedures, including the removal and emptying of the collection drawer, are only to be performed by specialist personal with personal protective equipment.

The people assigned to cleaning work must be instructed on the aspirated toxic materials. Harm to bystanders and the environment must be prevented by all means. Clean the maintenance area thoroughly once maintenance is complete.



4.8 Preventing noise hazards

	CAUTION
	<p>Danger of hearing damage from release of compressed air impulses when filter elements are being cleaned</p> <ul style="list-style-type: none">• Keep device covers closed.• Wear hearing protection.• Only open the device with the compressed air tank depressurised. To do this:<ul style="list-style-type: none">- Switch off suction on the control unit- Wait for the automatic post-cleaning to end- Disconnect the compressed air supply from the device- Empty the compressed air tank – through the control system if necessary• Only open the device when stopped. To do this:<ul style="list-style-type: none">- Turn the device off at the main switch- Cut off the power supply by pulling the electrical plug



The manometer attached to the compressed air tank is used for monitoring the pressure in the tank.

5 Delivery and commissioning

5.1 Delivery and transport

	DANGER
	<p>Danger from falling device</p> <ul style="list-style-type: none"> Do not walk under heavy loads. The lifting and transporting equipment must be designed for the weight of the device.

	WARNING
	<p>Crushing hazard if the device settles during transport</p> <ul style="list-style-type: none"> Secure the device during transport. Wear safety shoes.

	CAUTION
	<p>Risk of damaging the device due to improper transport.</p> <ul style="list-style-type: none"> Do not push the device over the floor if it does not have any rollers. Use only suitable lifting and transport equipment (such as a forklift or lift truck) when transporting the device to its set-up location. Watch out for the centre of gravity – which is not in the centre – when positioning. Make sure the floor has adequate weight capacity and can be properly driven on when transporting the device.

Permitted sling gear:

- Lifting belt
- Round sling

Permitted lifting gear:

- Forklift
- Crane



Upon delivery inspect the device for transportation damage. Damage determined must be reported and documented immediately. At delivery, the device is fastened to a pallet.

1. Remove the protective cover and floor securing devices.
2. Check the delivery is complete
3. Lift the device from the pallet using a forklift at the positions provided and place it down on the immediately adjacent floor


Or

4. Hang the device using sling gear (e.g. a lifting belt, round sling) at the positions provided, lift it from the pallet and place it down on the immediately adjacent floor.
5. Pay attention to the weight of the device and its centre of gravity during all transport work.
6. Use the attached rollers for further transport to its installation location.


5.2 Connection

Place the device on an even surface as close as possible to the dust source. Ensure the device is aligned horizontally when setting it up.

5.2.1 Electrical connection

	DANGER
	<p>Electric shock from high voltages</p> <ul style="list-style-type: none"> Follow the safety rules for working with electrical devices! Secure the main switch against reactivation with a padlock when working on the device. Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.

NOTE
<p>Before establishing cable connections between the device and the mains, check whether the operating voltage specified on the rating plate matches that of the mains.</p>

	<p>RSD AC/DC sensitive Fault caused by residual current</p>
	<p>In accordance with DIN VDE 0100-530, a residual current circuit breaker or residual current circuit breaker RCD AC/DC sensitive Type B must be used with a three-phase current frequency converter.</p>

A CEE wall socket with a slow-blow fuse must be in place to supply the device with power.

Connection to the building's power supply is made at the installation location.

DUSTOMAT		4-10	4-24
Connection plug	[Amp.]	CEAG-CEE 16	
Mains (standard)		Three-phase current 400V/50Hz 3N ~	
Fuse	[Amp.]	C16A (circuit breaker)	



* Custom voltage on request; observe the specifications on the rating plate.

5.2.2 Activation operations for motors:

Motors with high output without frequency converters should not be switched on and off within a short period of time too frequently. Otherwise, electrical components could overload as a result. Please observe the table for activation operations:

Motor output	Activation operations per hour
1 – 4 kW	Up to 8 starts
4 – 7,5 kW	Up to 6 starts
7,5 – 15 kW	Up to 4 starts
15 – 30 kW	Up to 3 starts
from 30 kW	Electronically controlled overrun time

5.2.1 Control unit description



The control unit is equipped with the following elements.

1) MAIN SWITCH

Device main switch for turning the device on and off.

This switch also serves as an EMERGENCY-OFF switch and can be secured with a lock against unintentional activation.

2) CONTROL PANEL

Suction is started/stopped on the control panel. In addition, all status and error messages are shown in plain text on the display. Furthermore, device settings can be adjusted.

5.2.2 Pneumatic connection

NOTE

Risk of corrosion to the compressed air tank or damage to the filter elements when using unfiltered compressed air.

Use a compressed air maintenance unit (not included in delivery) to make sure that only oil- and water-free compressed air is fed to the device..

Compressed air is required for the pneumatic jet pulse cleaning of the filter elements in the filter unit. Connect oil and water-free compressed air to ensure operational safety and machine availability.

The connection to the compressed air system is made at the installation location.

DUSTOMAT ATEX		4-10	4-24
Compressed air quality (ISO 8573-1:2010-04)		Class 3.2.2	
Pressure	[bar]	4 - 6	
Connection-ø	["]	1/4 (ø9mm)	
Compressed air consumption *	[l/pulse]	19	

* at 4 bar with a valve opening time of 0.12 sec.



5.2.5 Suction line connection

	DANGER
	<p>Risk of explosion due to use of unauthorised spare and accessory parts</p> <ul style="list-style-type: none">• Only use original ESTA spare parts and plug devices in line with EN 60079-14.• The operator is to ensure that conductible extraction systems (e.g. extraction hood and pipe line) and conductible processing machine (e.g. devices of protection class II), which are not earthed via the device, are earthed in a different fashion.

Connect the processing machine to be vacuumed to the filter unit's intake connection piece through a pipe or hose line.



For a suction line, use

- an appropriate suction hose that meets the national requirements for this application.
- an appropriate pipe (wrap fold) that meets the national requirements for this application.
- approved adapters for short diameter on the connection piece


	<p>If the vacuum monitor is changed, the pipe diameter increased or the pipeline lengthened, it cannot be guaranteed that no dust deposits will collect in the pipeline.</p>
	<p>Observe the minimum air speed for your application. Regularly check the pipeline for dust deposits.</p>

5.3 Function check

	<p>Before the device is first used, a function check must be performed.</p>
--	---

Turn the main switch to position "I" for a device function check.

5.3.1 Rotation direction monitoring

	DANGER
	<p>Electric shock from high voltages</p> <ul style="list-style-type: none"> • Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.

When the direction of rotation is incorrect, the device becomes impermissibly hot, the volume increases, the airflow volume falls, and the device's suction performance suffers. Damage to the device cannot be ruled out.

After first switching on the device, you should check that the fan rotor's direction of rotation is correct.

Display shows:	Activity
Rotating field incorrect Operation prohibited	<ol style="list-style-type: none"> 1. Switch on the device at the main switch. 2. Turn the device off at the main switch 3. Pull the power plug.
DUSTOMAT Ready for operation	<ol style="list-style-type: none"> 1. Turn the phase inverter in the CEE plug. 2. Insert the power plug. 3. Switch on the device at the main switch. <i>The device is ready for operation.</i> 4. Turn the device off at the main switch.

5.4 Commissioning



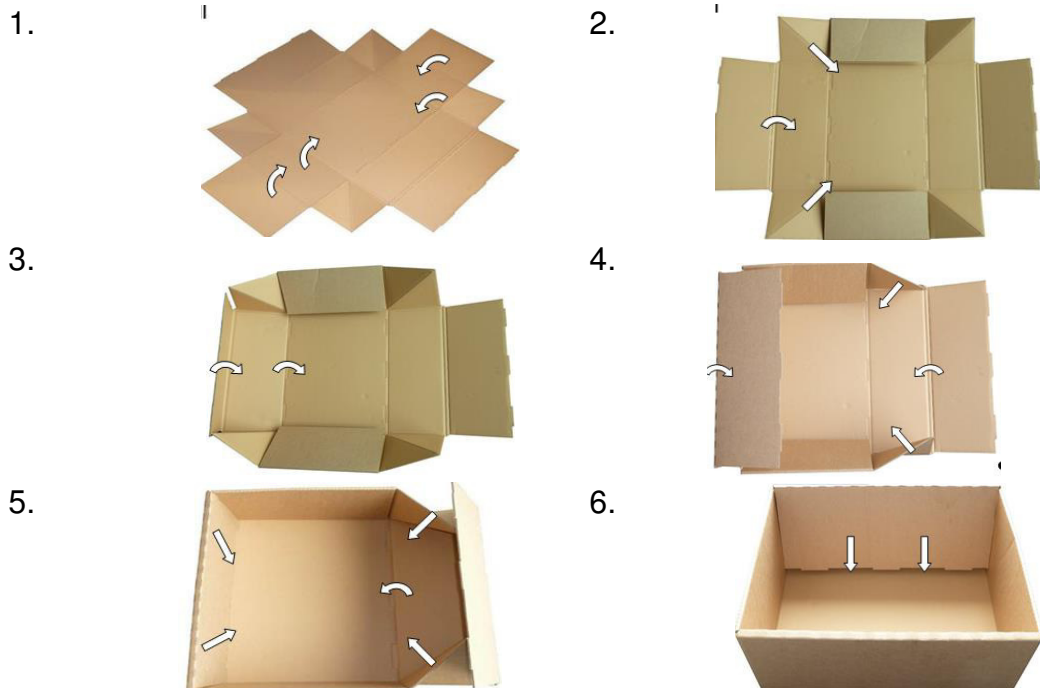
Use original ESTA accessories.

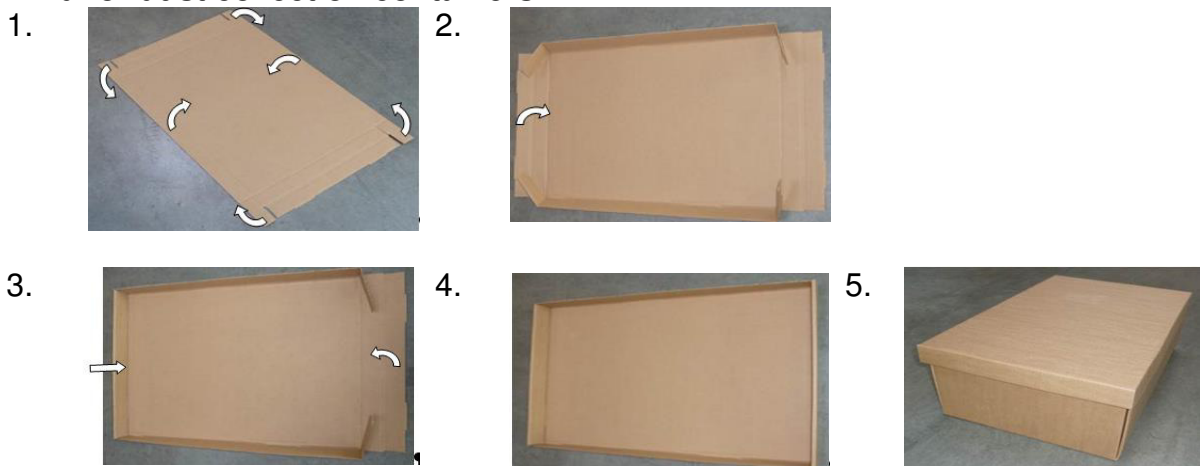
Once a functional inspection has been completed, the connection is made to the processing apparatus that is to be extracted.

1. Disconnect the product from the compressed air supply.
2. Switch the product on via the connected main system.
3. Place the product on an even surface as close as possible to the work station.
4. Switch the product back on via the connected main system.
5. Connect the compressed air.

5.4.1 Preparing the dust collection containers

Dust collection containers are inserted in the dust collection drawer. Prepare this as follows:



Lid for dust collection containers

Insert an empty disposal carton (without lid) into the collection drawer.



1. Lift up the lever of the lifting device to lower the collection drawer.
2. Pull out the collection drawer slowly and carefully.
3. Insert a new, empty disposal carton into the bracket of the collection drawer.
4. Push the collection drawer fully back into the product.
5. Push the lifting device lever down so that the collection drawer is closed upwards tightly.

5.5 Troubleshooting during commissioning

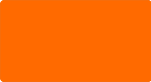
Fault	Possible cause	Possible solution
The motor shuts down before reaching the operating speed.	The switching devices present are incorrectly set up or unsuitable	Adjust the switching devices accordingly; possibly provide for heavy starts.
Motor power consumption is too high. The desired air quantity is not reached.	Direction of motor rotation is incorrect.	Change to rotation direction by turning the phase inverter in the connector.
The supply cable's preliminary fuse has tripped.	Motor was switched on/off too often within a short period of time.	Please consult the "Activation operations for motors" table.

6 Operating instructions

6.1 Control panel of the ESTA control system (standard)

Switch on the device at the main switch. The suction in manual mode is then switched on and off by pressing the "ON/OFF" button.



 Display for show messages, instructions and operating states.



1. Accessing the operation menu
2. Entering the ESC function in the menu



1. Navigation in the menus
2. Value adjustment
If held down, automatic value adjustment starts. The value increases if the key is pressed down for an additional 5 seconds.



1. Beyond the menu functions:
Switching the suction on and off / post-cleaning start
2. Within the menu function:
Selection / ENTER function

6.1.1 Operating via the control panel of the ESTA control system

ESTA dust extractor
Ready for operation

Once the device has been switched on at the main switch it is ready for operation. In this process the suction is not activated.



Start operation:

1. Switching the suction on and off.

Extractor fan: ON
DP filter = - 0.1 mbar

Display during suction operation.

Post cleaning running
Valve number = 2

After deactivation, the post-cleaning of the filter starts automatically. Then the device switches back to a ready for operation state.
Betriebsbereit.

6.2 Operating the device

After connecting the suction hose to the dust source:


1. Turn the suction device on at the main switch.
2. Start suction on the control panel.
3. Start processing machine / extraction element.
4. Start the processing operation.


During operation, do not change the device's location.


When finishing the processing operation:

1. End the processing operation.
2. Switch off processing machine / extraction element.
3. Switch off suction on the control panel.
4. Switch off suction device.

6.3 Jet pulse cleaning

	CAUTION
	<p>Danger of hearing damage from release of compressed air impulses when filter elements are being cleaned</p> <ul style="list-style-type: none"> • Keep device covers closed. • Wear hearing protection. • Only open the device with the compressed air tank depressurised. <p>To do this:</p> <ul style="list-style-type: none"> - Switch off suction on the control unit - Wait for the automatic post-cleaning to end - Disconnect the compressed air supply from the device - Empty the compressed air tank – through the control system if necessary <ul style="list-style-type: none"> • Only open the device when stopped. <p>To do this:</p> <ul style="list-style-type: none"> - Turn the device off at the main switch - Cut off the power supply by pulling the electrical plug

	<p>In the event of manual cleaning, dust may leak from the suction points during cleaning due to the pulse-like introduction of compressed air if the fan is not running.</p>
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	<p>You will get an optimum cleaning result for the cleaning process when the product is completely switched off.</p>
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The filter unit of the product has an integrated, pneumatics-based filter cleaning unit (Jet-pulse cleaning). For this, compressed air is needed. Always connect oil and water-free compressed air to ensure operational safety and product availability.

Jet-pulse cleaning provides the following functions:

- Automatic cleaning during suction operation
- Automatic post-cleaning
- Manual cleaning

6.3.1 Automatic cleaning during suction operation

When?

- Suction power weakens.
- The device reaches the preset minimum airflow volume.

How?

- Cleaning cycle starts automatically while the fan is still running.
Pulse-like compressed air blasts are blown into the filter cartridges one after the other.
- Wait at least 5 minutes until the cleaning cycle has been completed before opening the extraction system.

6.3.2 Automatic post-cleaning

When?

- Suction is switched off at the control panel.

How?

- Cleaning cycle starts automatically while the fan is still running.
Pulse-like compressed air blasts are blown into the filter cartridges one after the other.
- Wait at least 5 minutes until the cleaning cycle has been completed before opening the extraction system.

6.3.3 Manual cleaning

When?





- At any time during operation.
The device is switched off and the automatic post-cleaning cycle is complete.
 - E.g. to empty the compressed air tank prior to opening the device.


How?

- Press the "cleaning-test" button on the switch cabinet.
Pulse-like compressed air blasts are blown into the filter cartridges one after the other.
- Wait at least 5 minutes until the cleaning cycle has been completed before opening the extraction system.


7 Maintenance & troubleshooting


7.1 Maintenance instructions


	<p>DANGER</p> <p>Risk of explosion from opening the control cabinet in an explosive zone.</p> <ul style="list-style-type: none"> • Only open control cabinet outside of explosion zones.
	<p>DANGER</p> <p>Risk of explosion from opening the device in an explosive zone.</p> <ul style="list-style-type: none"> • Perform maintenance, cleaning and servicing work for which the device must be opened in a well-ventilated room or install locally filtered forced-air ventilation in this area. • In the event of maintenance, cleaning and servicing work for which the device must be opened, only use tools and wear protective clothing (ESD) that are suitable for the zone.
	<p>DANGER</p> <p>Risk of explosion from working on the device with tools that are not permitted</p> <ul style="list-style-type: none"> • In the event of maintenance, cleaning and servicing work for which the device must be opened, only use tools and wear protective clothing (ESD) that are suitable for the zone.
	<p>CAUTION</p> <p>Damage due to dust release</p> <ul style="list-style-type: none"> • Maintenance, cleaning, repair and emptying work must be done only by expert personnel. • Wear personal protective gear. <ul style="list-style-type: none"> - Respirator mask (particle filter class P3) - Protective clothing - Protective gloves • Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned. • Seal the intake port with a sealing plug so it is dust-tight when transporting.


	<p>CAUTION</p> <p>Danger of hearing damage from release of compressed air impulses when filter elements are being cleaned</p> <ul style="list-style-type: none"> • Keep device covers closed. • Wear hearing protection. • Only open the device with the compressed air tank depressurised. <p>To do this:</p> <ul style="list-style-type: none"> - Switch off suction on the control panel. - Wait for the automatic post-cleaning to end - Disconnect the compressed air supply from the device - Empty the compressed air tank – through the control system if necessary <ul style="list-style-type: none"> • Only open the device when stopped. <p>To do this:</p> <ul style="list-style-type: none"> - Turn the device off at the main switch - Cut off the power supply by pulling the electrical plug
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For maintenance by qualified personnel, the device must be opened, cleaned and inspected at the given locations. During maintenance or repair work, all soiled objects that can no longer be adequately cleaned must be disposed of. Dispose of such objects in bags impermeable to dust in compliance with the applicable regulations for disposal of such waste.

	<p>Conduct annual repeat examinations VDE 0701 – 0702, VDE 0600. Depending on the mode of operation, the time intervals could be shorter. In this process, the entire system must be checked for its seamless functioning by trained specialist personnel. Keep written proof of the main annual inspection in the maintenance book enclosed. The date of the inspection, detected deficiencies and the name of the auditor must be visible from this. The date of the next maintenance session can be read on the inspection plate installed on the device.</p>
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	<p>According to work equipment user directives 2009/104/EG and TRGS 560, safety devices for prevention or removal of hazards must be regularly maintained and regularly inspected by an expert for safe, flawless operation.</p>
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	<p>The maintenance work must be recorded in writing in the maintenance book provided. This must make clear the equipment inspected and, if necessary, the deficiencies found, along with the name of the inspector and the date of the inspection.</p> <p>When there is a malfunction, switch the device off immediately and contact the responsible maintenance service!</p>
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	<p>ESTA maintenance service: +49 (0) 7307 804 - 0 ESTA replacement part service: +49 (0) 7307 804 - 0</p>
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7.2 Inspection and maintenance intervals

<p>The inspection and maintenance intervals specified here refer to normal application conditions.</p> <p>In the event of difficult conditions (e.g. heavy dust accrual, etc.) and longer daily hours of operation:</p> <ul style="list-style-type: none"> Shorten the intervals specified <p>In the event of occasional use of the device:</p> <ul style="list-style-type: none"> Extend the intervals specified 								
		Daily Operator	Weekly Operator; specialist maintenance personnel	Monthly Specialist maintenance personnel	Half-yearly Specialist maintenance personnel	Annually In collaboration with the ESTA maintenance	In the event of damage	As required
Whole device	Visual inspection	X						
	Clean			X				
Power cable	Visual inspection	X						
	Replace					X		
Collection container fill level	Visual inspection	X						
	Empty						X	
Air guide plate	Visual inspection		X					
	Clean						X	
Filter mat on outlet element	Visual inspection				X			
	Replace						X	
Minimum volume flow control	Function check	X						
	Configure						X	
Trails of dust or deposits on air outlet openings	Visual inspection			X				
Gas pressure absorbers on the filter unit lid	Function check			X				
	Replace					X		
Volume flow	Measurement				X			
Negative pressure	Measurement				X			
Power consumption	Measurement				X			
Filter	Visual inspection				X			
	Replace						X	
Whole device tightness	Function check				X			
Compressed air tank	Visual inspection				X			
	Discharge condensation				X		X	

7.2.1 Spare and wear parts




Use original ESTA replacement and wear parts!



With the device's model information and serial number, request the replacement parts you need from
ESTA replacement part service: +49 (0) 7307 804 - 0

Replacement parts DUSTOMAT 4 ATEX	Unit	4-10	4-24
Antistatic filter cartridge	2 piece	01000497	01000518
Filter cartridge oil/water-repellent	2 piece	01000501	01000174 á 12,5 m ²
PTFE filter cartridge	2 piece	-*	01000172* á 14 m ²
Antistatic PTFE filter cartridge	2 piece	01000500	01000164
Control filter	1 piece	01001041	01001040
Disposal carton with lid	1 set 8 piece		30008311 06001074
Disposal carton with lid	1 set 10 piece		30xxxxxxx 06001074
Filter mat, outlet	piece		01000312
Disposal bag for filters	1 set 10 piece		30000567 06000358

7.3 Detaching the filter mat outlet element

	CAUTION
	<p>Damage due to dust release</p> <ul style="list-style-type: none"> • Maintenance, cleaning, repair and emptying work must be done only by expert personnel. • Wear personal protective gear. <ul style="list-style-type: none"> - Respirator mask (particle filter class P3) - Protective clothing - Protective gloves • Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned. • Regularly check whether the filter mats have clogged. • Operate the device only with the complete filtration system.

A filter mat is installed on the outlet openings in the device cover. This must be checked regularly and replaced where necessary. Perform a visual inspection when you take off the device cover off the device during cleaning, repair or maintenance work. To do this:

1. Switch off the suction on the control panel and wait for the post-cleaning.
2. Disconnect the compressed air supply.
3. Empty the compressed air tank – through manual cleaning, if necessary – on the control panel.
4. Switch off the device on the main switch and pull the power plug.
5. Take off the end caps via the fastening screws of the outlet element.
6. Release and remove the fastening screws.
7. If available → Detach the potential equalisation from the cover.
8. Take the outlet element cover off.
9. Remove the old filter mat without leaving residue.
10. Attach the new filter mat into the cover.
11. Place the cover onto the device with the outlet openings pointing upwards.
12. If available → Attach potential equalisation to the cover.
13. Insert the fastening screws of the cover and tighten them.
14. Re-attach the compressed air supply.
15. Re-insert the power plug.

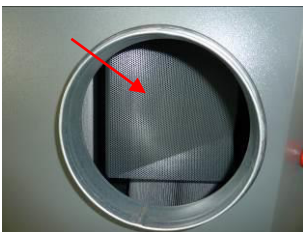
The device is now ready to operate again.



7.4 Clean the air guide plate

	CAUTION
	<p>Fire hazard from deposits on the air guide plate</p> <ul style="list-style-type: none"> • Regularly remove flammable adhesions and deposits from the air guide plate. • Prevent spark ingress.

	CAUTION
	<p>Damage due to dust release</p> <ul style="list-style-type: none"> • Maintenance, cleaning, repair and emptying work must be done only by expert personnel. • Wear personal protective gear. <ul style="list-style-type: none"> - Respirator mask (particle filter class P3) - Protective clothing - Protective gloves • Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned.



The air guide plate acts as a filter pre-separator. This prevents the ingress of coarse particles into the filter space. Furthermore, it has an air-channelling function, with which the service life of the filter cartridges is improved.

The air guide plate must be checked regularly for adhesions and cleaned where possible. Depending on the type of application, a weekly check of the external and internal sides of the air guide plate is necessary. If adhesions are detected in this process, these must be removed.

Clean the air guide plate



1. Switch off suction via the connected main system.
= Wait for the post-cleaning for approx. 5 minutes.
2. Disconnect the product from the compressed air supply.
3. Empty the compressed air tank – through manual cleaning.
4. Remove the pipe or hose line at the intake connection piece.
5. As far as possible, wipe down the adhesions on the accessible part of the air guide plate through the intake connection piece using a damp disposable cloth, or vacuum it with a suitable industrial vacuum cleaner
6. Wait for approx. 5 minutes
The dust in the collection container can settle.
7. Release the fastening screws of the clamping profile and take out the nuts.
8. Open the device cover of the filter unit with an upward pivoting motion.
9. Release the fastening nuts around the pre-separator and take them out.
10. While you are carefully pulling out the air guide plate with the handle
11. Wipe off the incrustations in a downward direction with a damp disposable cloth or vacuum it with an industrial vacuum cleaner
12. Visual inspection of whether the filter cartridges display mechanical damage.
13. Insert the fastening nuts around the air guide plate and screw these in tightly.
14. Push the pipe or hose line onto the intake connection piece and fix this firmly.
15. Re-attach the compressed air supply.

=> The product is now ready to operate again. .

Empty collection drawer and change disposal carton



1. Switch off the suction on the control panel and wait for the post-cleaning.
2. Disconnect the compressed air supply.
3. Empty the compressed air tank – through manual cleaning, if necessary – on the control panel.
4. Switch off the device on the main switch and pull the power plug.
5. Wait for approx. 5 minutes so that the dust in the collection drawer can settle.
6. Lift up the lever of the lifting device to lower the collection drawer.
7. Pull out the collection drawer slowly and carefully.
8. Take the collection drawer to the emptying point using a lift truck, for example.
9. Clean the inside of the collection drawer with a suitable industrial vacuum cleaner or with a damp disposable cloth.
10. Push the collection drawer fully back into the device.
11. Push the lifting device lever down so that the drawer is closed upwards tightly.
12. Re-attach the compressed air supply.
13. Re-insert the power plug.

=> *The device is now ready to operate again.*

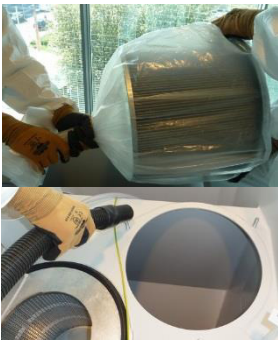
7.5 Replacing the control filter

- ## 7.6 Replacing filter cartridges

After an extended period of operation, the filters clog up slowly due to the ingress of extremely fine dust in the pores. Jet pulse cleaning can no longer remove this penetrated dust. Filters must be replaced with new ones. This work should be done only by an expert.

If possible, filter replacement must be done when there is no work going on. This process requires 2 people with personal protective gear.

Also pay attention here to the supplementary maintenance instructions!



1. Switch product off.
2. Disconnect the compressed air supply.
3. If necessary, empty the compressed air tank by means of manual cleaning.
Wait approx. 5 minutes while the dust is collected in the collection containers.
4. Unscrew and remove the fastening screws on the cover of the product.
5. Take off the device cover on the handles.
6. Loosen and completely remove the filter cartridges' fixing nuts.
7. Fold the disposal bag over the edge of the filter cartridge.
8. As you carefully remove the filter cartridge, the disposal bag must be pulled over the entire filter cartridge by the second operator.
9. Fasten the end of the bag securely with a cable tie.
10. Remove remaining filter cartridges as described.
11. Clean the rim around the opening for inserting the filter cartridge.

Avoid raising dust

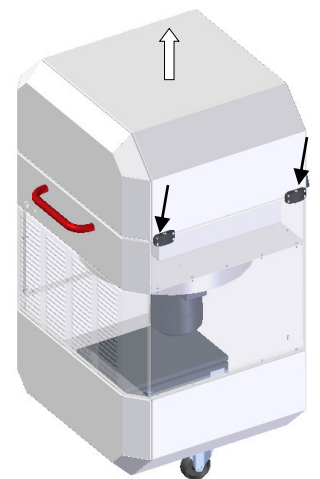


7.7 Policing filter as a secondary filter cassette (dust class H)

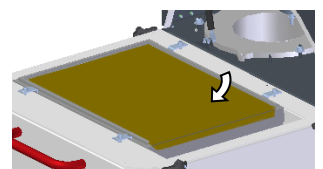
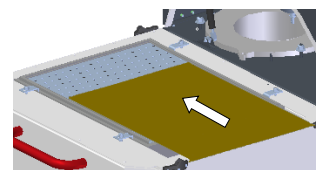
The filter cassette is located directly in front of the fan. After an extended operation period, the filter cassette's pores can be clogged by extremely fine dust. The filter cassette must be replaced with a new one. This work should be done only by an expert!

If possible, filter replacement must be done when there is no work going on. This process requires 2 people with personal protective gear.

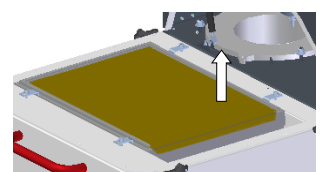
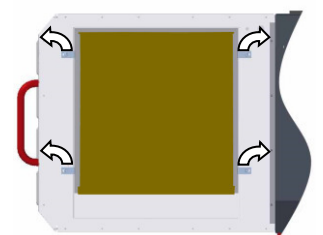
16. Switch off the suction on the control panel and wait for the post-cleaning.
17. Disconnect the compressed air supply.
18. Pull the power plug.
19. Release the fastening screws around the clamping profile.
20. If available → Detach the potential equalisation from the device cover.
21. Remove the device cover from the device and place it on the other cover.



22. Pull off the protective film on the adhesive seam of the covering cardboard for the filter cassette.
23. Insert the cover cardboard into the holding frame on the filter cassette, so that this seals it off all around.
24. Fold down the glued edges so that the top side of the filter cassette is sealed.



25. Release the clamping nut on the filter cassette's hold-down clamp.
26. Turn the hold-down clamps to the side.
27. Take out the entire filter cassette from the bracket on the holding strap.

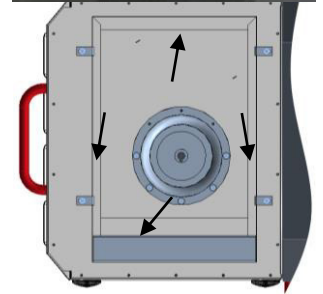


28. Then put the filter cassette into a suitable disposal bag.

29. Seal the disposal bag with a cable tie or suchlike.



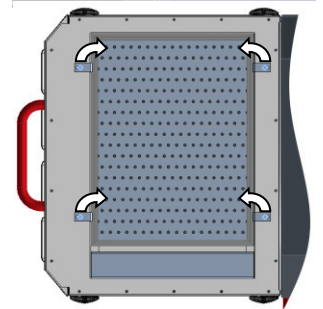
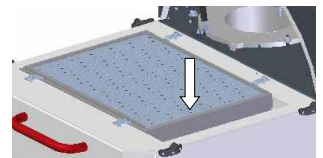
30. Clean the supporting surface for the filter cassette with a suitable industrial vacuum cleaner or with a damp disposable cloth.



31. Insert a new filter cassette. → Pay attention to the correct direction of flow!

32. Turn the hold-down clamp for the filter cassette back in and place this on the edge of the filter cassette.

33. Fasten the hold-down clamps with the clamping nuts.



34. If available → Re-attach the potential equalisation on to the cover.

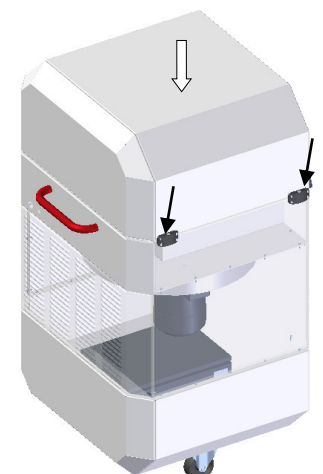
35. Take the device cover and place this back on the device.

36. Insert the fastening nuts around the clamping profile and screw these in tightly.


37. Re-attach the compressed air supply.


38. Re-insert the power plug.


39. The device is now ready to operate again.



• 7.8 Eliminate faults



	DANGER
	High-voltage electric shock when working on the open switch cabinet <ul style="list-style-type: none">• Follow the safety rules for working with electrical devices!• Secure the device against reactivation with a padlock!• Render the device voltage-free by pulling the mains connector!• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.

	CAUTION
	Damage from dust leaks and dust trails at air outlet openings. <ul style="list-style-type: none">• Turn the device off at the main switch immediately.


	CAUTION
	Danger from the fan producing smoke and loud running noises <ul style="list-style-type: none">• Turn the device off at the main switch immediately.

Fault	Possible cause	Possible solution
Suction too weak.	Filter soiled.	Clean filter.
	Throttle is shut too firmly.	Open throttle accordingly.
	Clog due to deposited residue in the suction pipe system.	Check the suction pipe system for deposited residue and clogs, and clean it if necessary.
	Cleaning point too low, meaning no cleaning of the filter.	Contact ESTA customer services to adjust the cleaning point.
Automatic cleaning always starts after switching on the device.	Filter worn.	Perform filter change.
	Collection drawer full.	Replace disposal carton; empty collection drawer if necessary.
	The resistances in the suction system are too high.	Check suction pipe; if necessary, use pipeline with larger diameter or reduce length of pipeline.
	Cleaning point set up too high.	Contact ESTA customer services to adjust the cleaning point.
Motor protection trips.	Motor was switched on/off too often within a short period of time.	Please consult the "Activation operations for motors" table.
Dust leaks and dust trails at air outlet openings.	Filter breakage	Turn the device off immediately. Then clean the entire device and replace the filter elements (filter cartridges, filter mats, etc.) with new ones.
	Filter inadequately attached.	Check installation of filter elements (filter cartridges, filter mats, etc.).
Smoke development or load running noises of the fan.	Imbalance in the fan.	Turn the device off immediately and have ESTA customer service inspect the fan.
	Rotor is scraping on the inlet nozzle or the housing.	
	Noises from the motor.	
Notification of the minimum volume flow control "Control filter full / operation prohibited" starts during operation.	The resistances in the suction system are too high.	Check suction pipe; if necessary, use pipeline with larger diameter or reduce length of pipeline.
	Filter breakage	Switch off the device immediately. Clean the device and replace all filters.

7.9 Setting the minimum airflow volume monitoring

	<p>DANGER</p> <p>High-voltage electric shock when working on the open switch cabinet</p> <ul style="list-style-type: none">• Follow the safety rules for working with electrical devices!• Isolate device!• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.
	<p>The monitoring equipment is set at the factory to a min. air velocity of 16 m/s.</p> <p>With dusts that require a higher air velocity, this is to be adjusted where necessary. Regularly check the pipeline for dust deposits.</p> <p>Conduct a pipeline inspection on a weekly basis after putting into operation, so that you are able to define plant inspection and cleaning intervals.</p>

7.10 Clean the device

	CAUTION
	<p>Damage due to dust release</p> <ul style="list-style-type: none">• Maintenance, cleaning, repair and emptying work must be done only by expert personnel.• Wear personal protective gear.<ul style="list-style-type: none">- Respirator mask (particle filter class P3)- Protective clothing- Protective gloves• Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned.• Regularly check whether the filter mats have clogged.• Operate the device only with the complete filtration system.

Clean the device regularly and remove dust deposits, especially on the device cover. To do this:

1. Remove the dust build-up with an industrial vacuum cleaner.
2. Wipe down thoroughly with a damp disposable cloth.
3. **Do not** spray down with a water jet!


• 7.11 Store the device


If the device is not needed in its location of use for a long time, it must be stored in a dry room. The temperature should not be below 5°C or above 40°C.

Before the device is stored away,

1. Clean the filter cartridges; install new ones if necessary.
2. Empty the collection drawer and dispose of the collected material according to local regulations.
3. Clean the device inside and out.
 - With a damp disposable cloth.
 - With an industrial vacuum cleaner.
 - **Do not** clean with a water jet!

8 Disposal

	CAUTION
	<p>Damage due to dust release</p> <ul style="list-style-type: none"> • Emptying and disposal work only to be performed by specialist staff. • Wear personal protective gear. <ul style="list-style-type: none"> - Respirator mask (particle filter class P3) - Protective clothing - Protective gloves • Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned.


	CAUTION
	<p>Damage due to the release of the dust from used filter elements</p> <ul style="list-style-type: none"> • Do not clean by blowing or beating dust out. • Dispose of used filter element in air-tight-sealed disposal bags in accordance with local regulations.

- Dispose of the tightly sealed disposal bag with the filter cartridge according to local regulations.
- Dispose of the tightly sealed disposal carton according to local regulations.

8.1 Disposal of the device

Before disposing of the device

1. Take the disposal carton out of the device and seal it tightly.
2. Remove the filter cartridges and package them tightly.
3. Take the removable parts (e.g. motor, fan, cover, etc.) out of the device.
4. Package the device and the detachable parts as specified by local regulations.
5. Dispose of everything according to local regulations.

	<p>Due to contamination of the device with toxic dusts, ESTA cannot take the device or individual parts of it back.</p>
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9 Optional equipment

The device can be fitted with different equipment options. The following optional equipment is available for this device.

Potential-free contact operation

Optionally, the device can be equipped with a start-up through an external potential-free contact for operation. To this observe the circuit diagram.

Potential-free contact error

Optionally, the device can be equipped with a start-up through an external potential-free contact for fault indication. To this observe the circuit diagram.

Active carbon filter

Optionally, an active coal filter positioned downstream of the main filters can be used. To this there's addition documentation.

Control filter

Optionally, a control filter positioned downstream of the main filters can be used. To this there's addition documentation.

Air vents

You have the option of fitting the device with an air vent on the fan unit. To this there's addition documentation

Spark pre separator

Optionally, a pre-separate isolated sparks carried along in the exhaust airflow and to minimise the risk of fire due to sparks and glowing particles. To this there's addition documentation

10 EC-/EU-Declaration of Conformity

Name of manufacturer: ESTA Apparatebau GmbH & Co. KG
Address of the manufacturer: Gotenstraße 2 - 6
 89250 Senden

Responsible for documentation: ESTA Apparatebau GmbH & Co. KG
 Gotenstraße 2 - 6
 89250 Senden

We hereby declare that the design of the machine

Machine: Dust extractor for collecting, conveying and separating dry, free-flowing, flammable, explosive and conductive dust-air mixtures in dust explosion zone 22.

Series: Small dust extractor platform

Model: **DUSTOMAT 4-10 ATEX**
DUSTOMAT 4-24 ATEX

and variants with optional equipment

conforms to the following regulations:

2006/42/EC	EC Machine Directive
2014/34/EU	EU Directive Devices and protection systems for intended use in explosive areas
2014/30/EU	EU Electromagnetic Compatibility Directive
2014/29/EU	EU Simple Pressure Vessels Directive

The safety objectives of the **Low Voltage Directive 2006/95/EG** have been complied with in accordance of the Annex I, no. 1.5.1 of the Machinery Directive 2006/42/EC.

The device markings must contain the following specifications:



II 2D Ex tc IIIB T135° Dc X internal
II 3D Ex tc IIIB T135° Dc X external

(IIIB = non-conductive dusts // Dc = normal operation // X = instructions for user)
 (IIIB = non-conductive dusts // Dc = normal operation // X = instructions for user)

Reconciled norms used:

DIN EN ISO 12100:2011-03	Safety of Machinery – Basic concepts, general principles for design
DIN EN ISO 13857:2008-06	Safety of Machinery – Safety distances to prevent danger zones from being reached by upper and lower limbs
DIN EN 349:2008-09	Safety of machinery - minimum distances for preventing body parts from being crushed
DIN EN ISO 80079-36	Explosive atmospheres - Part 36: Non-electrical products for use in explosive atmospheres - principles and requirements
DIN EN ISO 80079-37	Explosive atmospheres - Part 37: Non-electrical product for the use in explosive atmospheres - protection by design safety "c", ignition source monitoring "b", fluid encapsulation "k"
DIN EN 60079-0:2015-11	Explosive areas – resources; general requirements
DIN EN 60079-31:2014-12	Explosive atmospheres – Dust explosion device protection through housing "t"
DIN EN 1127-1:2011-10	Explosive atmospheres – explosion protection; principles and methods
DIN EN 60335-1:2012-10	Safety of electrical appliances for household and similar use - general requirements
DIN EN 60335-2-69:2015-07	Safety of electrical appliances for household and similar use – Special requirements for dust and water suction systems including power brushes for commercial use
DIN EN 60204-1:2007-06	Safety of machinery – electrical machinery equipment - general requirements
DIN EN 61000-6-1:2007-10	EMC generic standard - Immunity for residential, commercial and light-industrial environments
DIN EN 61000-6-2:2006-03	EMC generic standard – Immunity for industrial environments
DIN EN 61000-6-3:2011-09	EMC generic standard - Interference for residential, commercial and light-industrial environments
DIN EN 61000-6-4:2011-09	EMC generic standard – Immunity for industrial environments
DIN EN 61000-3-2:2015-03	EMC limits – Limits for harmonic current emissions (device input currents ≥ 16 A per cable)
DIN EN 61000-3-3:2014-03	EMC limits – limitation of voltage changes, voltage fluctuations and flickers in low-voltage public supply systems for devices and equipment with a rated current ≥ 16 A per cable, not subject to a special connection

National norms and technical specifications used:

VDI 3677
TRBS 2153 (04/2009)

Filtering separators
Preventing ignition hazards resulting from electrostatic charges (Section 6.2.4)

Senden, 04.05.2017

Dr. Peter Kulitz
Managing Director

11 Special conditions for the user


11.1 Zone classification


Installation locations	Zone 22
Raw gas room (filter)	Zone 21, internal
Clean air side (before H-filter)	Zone 22
Clean air side (after H-filter)	No zone


11.2 General notes for the user

An ignition hazard assessment was performed for the device.


	DANGER
	<p>Risk of explosion from the intake of sources of ignition</p> <ul style="list-style-type: none">• Ensure that no ignition sources can be sucked in.• The following potential sources of ignition must be excluded from the process:<ul style="list-style-type: none">- Suction of flames and hot gases- Stray electric currents, cathodic corrosion protection- Suction of liquid mist and vapours- High-frequency electromagnetic waves- Ionising radiation- Ultrasound- Adiabatic compression and shock waves- Exothermic reactions, auto-ignition of dust- The suction of ignition sparks and hotspots- The danger of ignition / the development of flammable gases or steams with chloride, fluoride, fluorine


	DANGER
	<p>Risk of explosion from the intake of explosive gas-oxygen mixtures</p> <ul style="list-style-type: none"> • The suction of explosive gas-oxygen mixtures is forbidden!

	DANGER
	<p>Risk of explosion from installing and operating in a prohibited zone</p> <ul style="list-style-type: none"> • Installation and operation is only permitted in dust-explosion zone 22! • The device is appropriately safe for the suction of dry, free-flowing, flammable, conductive and explosive dust-air mixtures in dust-explosion zone 22. • Installation and operation in dust-explosion zones 20 and 21 is prohibited! • Installation and operation in gas-explosion zones is prohibited!

	The operator is obliged to compile an explosion protection document.
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11.3 Special notes for the user

	DANGER
	<p>Risk of zone-crossing in the event of filter breakage</p> <ul style="list-style-type: none"> • In the event of a filter break, switch the device off immediately. • Clean the device thoroughly and completely on the clean gas side (behind the filters) to prevent zone-crossing.

	Conduct a function of the control system check regularly, every 2,000 operating hours, to ensure the quality and functionality of the control system.
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